

REMARKS

The claims in the application are 1, 3-30, 32-35 and Claims 36-42 added by the present amendment.

Favorable reconsideration of the application as amended is respectfully requested.

Claim 35 has been amended to eliminate the rejection under 35 U.S.C. §112, second paragraph, raised in paragraph 2 of the Final Office Action, i.e., recite the claimed apparatus always cleaves rods 3 to provide end surfaces within $\pm 0.17^\circ$ from being exactly perpendicular to a longitudinal axis of the rods 3, as described at page 16, lines 5-10 of the specification (reference is being to preferred embodiments of the present invention illustrated in the drawings of the present application). Accordingly, it should now be quite clear the claimed recitation distinguishes over the prior art.

Independent Claim 1 has been amended to incorporate recitation from Claim 31 which has been canceled without prejudice, with Claim 2 also being canceled without prejudice to avoid inconsistency and dependency of Claim 32 accordingly revised. Additionally, Claims 36-42 introduced herein find clear support throughout the present application and drawings. Reference character notations in the claims have been clarified in accordance with the request in paragraph 6 of the Final Office Action.

Accordingly, the only outstanding issue is the prior art rejection of the claims.

Claims 1, 3-5 and 33-35 have been rejected under 35 U.S.C. §103 as obvious over U.S. Pat. No. 4,790,465 to Fellows et al. in paragraph 4 of the Final Office Action, while Claims 1-5 and 31-35 have been rejected as obvious over Fellows

et al in view of U.S. Pat. No. 6,000,310 to Shikrut et al in paragraph 5 of the Final Office Action. As pointed out *supra*, independent Claim 1 has been amended to incorporate recitation from Claim 31. In this regard, the Examiner relies upon Shikrut et al as showing it allegedly obvious to cut material at the claimed frequency and asserts, in paragraph 6 of the Final Office Action, Applicant must "explain how changing frequency from 'about 1000 Hz' to 999 Hz creates benefits."

Accordingly, a Declaration executed by the inventor, Uwe Bottcher, is enclosed herewith. In paragraph 3 of his Declaration, Mr. Bottcher points out it has been surprisingly discovered cleaving thin rods of glass or quartz of diameter below 1 mm. to form optical fibers actually improves when operating at much lower frequencies than conventionally used in the art. Cleaving at such lower frequencies results in substantially longer movement of the cleaving blade 27 in a direction towards the rod 3 in a period of time between two subsequent oscillations at given velocity. Thus, it is believed by Mr. Bottcher this surprising improvement may arise from increased chance the fiber parts are cut by just a single impact of the blade, thereby avoiding need for additional impact which would degrade the fiber surfaces. Additionally, Mr. Bottcher has found lowering frequencies lessens problems with harmonics in the cleaving blade. Therefore, Mr. Bottcher has surprisingly discovered it possible to obtain smooth cleaving by correlating relationship of steady movement of the blade 27 and frequency of oscillation.

In paragraph 4 of his Declaration, Mr. Bottcher points out Fellows et al disclose cleaving thin rods of glass or quartz by a blade vibrating at frequencies from 1 kHz up to 100 kHz, and with frequencies above 70 kHz actually being used. It is even

stated at column 3, lines 1-22 of Fellows et al blade oscillation frequency must be on the order of kilohertz to minimize intrusion into the optical fiber on impact. In other words, Fellows et al teach Mr. Bottcher, one skilled in the art, it is not possible to effectively cleave such thin rods of glass or quartz of diameter below 1 mm. by using frequencies below 1 kHz. However, as stated in paragraph 4 of his Declaration, Mr. Bottcher has surprisingly found, contrary to the teachings in Fellows et al, such cleaving actually improves when operating at much lower frequencies than taught by Fellows et al.

Mr. Bottcher then points out in paragraph 5 of his Declaration, Shilkrut et al are primarily directed to drilling concrete (column 1, lines 34-39) and only mention one embodiment for cutting carpets, etc. (column 15, lines 15-17 and Fig. 29). Generating thin fibers is not mentioned in this reference while the frequencies disclosed at column 3, line 7 and column 16, line 23 relate to drilling equipment. Thus, Mr. Bottcher states in paragraph 5 of his Declaration, Shilkrut et al contains no suggestion to him, one skilled in the art, of cleaving thin rods of glass or quartz having diameters below 1 mm., e.g., to form optical fibers.

Thus, Mr. Bottcher points out, in paragraph 6 of his Declaration, Shilkrut et al are so remote to technique of cleaving thin glass or quartz rods to form optical fibers, he, as one skilled in the art, would not even consider Shilkrut et al in seeking the solution attained by the claimed invention. Moreover, Mr. Bottcher then points out, in paragraph 6 of his Declaration, even if he (hypothetically) would consider the teachings of Fellows et al and Shilkrut et al. together, such combined teaching would only lead him in an opposite direction from the present invention. Accordingly, Mr.

Bottcher concludes, in paragraph 7 of his Declaration, any possible combination of Fellows et al and Shilkrut et al would lead him away from both (1) operating at the claimed frequency values to cleave such thin rods 3 of glass or quartz and (2) ever investigating such frequency values to actually improve cleaving.

Therefore, in answer to the Examiner's assertion in paragraph 6 of the Final Office Action noted *supra*

(i) independent Claim 1 has been amended to insert a frequency range (between 100 and 700 Hz) significantly below the minimum 1 kHz threshold frequency taught in Fellows et al to achieve satisfactory cleaving, and

(ii) clear, surprising benefits by operating at this claimed frequency range have been established as set forth in the enclosed Declaration by inventor Uwe Bottcher.

The remaining art of record has not been applied against the claims and will not be commented upon further at this time.

Accordingly, in view of the forgoing amendment, accompanying remarks and enclosed Declaration by inventor Uwe Bottcher, it is respectfully submitted all claims pending herein are in condition for allowance. Please contact the undersigned attorney should there be any questions. A petition for an automatic two month extension of time for response under 37 C.F.R. §1.136(a) is enclosed in triplicate, together with the requisite petition fee, RCE transmittal paper and filing fee and fee for additional claims introduced herein.

Early favorable action is earnestly solicited.

Respectfully submitted,


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